

1/8/16

"What you do today can improve all of your tomorrows" -Ralph Marston

HW: "Imaginary Numbers" worksheet #3-43 odd

AIM: What are Imaginary Numbers?

Warm Up:

1) Simplify: $\sqrt{81} = 9$

What about $\sqrt{-81}$?error
non real

$$\sqrt{81} \sqrt{-1}$$

Not real

$$\boxed{9i}$$

 $i = \text{imaginary}$

$$\sqrt{-1} = i$$

2) $\sqrt{-72}$

$$\begin{aligned} &\sqrt{-1} \sqrt{72} \\ &i \sqrt{36} \sqrt{2} \\ &i 6\sqrt{2} \\ &6i\sqrt{2} \end{aligned}$$

* Take - out as
an "i"

3) $\sqrt[3]{-8}$

$$\downarrow$$

$$\boxed{-2}$$

$$\begin{aligned} &\rightarrow (-2)(-2)(-2) = -8 \\ &\quad \quad \quad \downarrow \\ &\quad \quad \quad (+4)(-2) = -8 \end{aligned}$$

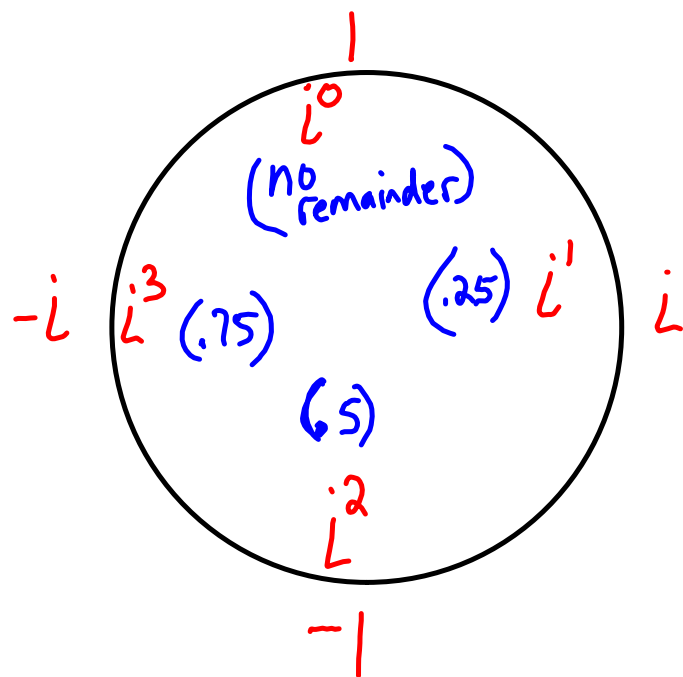
$$\begin{aligned} 4) \quad i^2 &= i \cdot i \\ &= \sqrt{-1} \cdot \sqrt{-1} \\ &= \boxed{-1} \end{aligned}$$

$$\begin{aligned} (-2)^2 &= 4 \\ (-2)^3 &= -8 \\ (-2)^4 &= 16 \\ (-2)^5 &= -32 \end{aligned}$$

$$(\sqrt{-1})^2 = -1$$

same

$$\begin{aligned}i^1 &= i \\i^2 &= -1 \\i^3 &= -i \\i^4 &= 1 \\i^5 &= i\end{aligned}$$



$$\begin{aligned} (-i)(i) &= -i^2 \\ &= -(-1) \\ &= 1 \end{aligned}$$